

NATIONAL HONEY REPORT



United States
Department of
Agriculture

Agricultural Marketing Service
Fruit and Vegetable Programs
Market News Branch

Website: www.ams.usda.gov/marketnews.htm

Issued Monthly

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Yakima, WA 98902
Phone: 509-575-8516 FAX: 509-575-5648

Vol. XXII - Number 3

For subscription information, please call 1-800-487-8796

Thursday, April 10, 2003

HONEY MARKET FOR THE MONTH OF MARCH, 2003
IN VOLUMES OF 10,000 POUNDS OR GREATER UNLESS OTHERWISE STATED
- REPORT INCLUDES BOTH NEW AND OLD CROP HONEY -

Prices paid to beekeepers for extracted, unprocessed honey in major producing states by packers, handlers & other large users, cents per pound, f.o.b. or delivered nearby, containers exchanged or returned, prompt delivery & payment unless otherwise stated.

CALIFORNIA

- Alfalfa, extra light & light amber, \$1.25
- Cotton/Alfalfa, light amber, \$1.30
- Mixed Flowers, extra light and light amber, \$1.20 – 1.50

COLORADO

- Clover, light amber, \$1.50

FLORIDA

- Orange Blossom, extra light amber, \$1.50
- Saw Palmetto, extra light amber, \$1.55
- Floral Not Reported, light amber, \$1.35

NEW CROP

- Mixed Wildflowers, white, \$1.45
- Orange Blossom, white, \$1.50

IDAHO

- Clover, light amber, \$1.40

ILLINOIS - Clover, white, \$1.40

MICHIGAN - Floral Not Reported, white, \$1.60

- Floral Not Reported, light amber, \$1.47

MINNESOTA

- Clover, white, \$1.60

MONTANA - Alfalfa, white, \$1.54

- Clover, white, \$1.50

NORTH DAKOTA

- Alfalfa, white, \$1.55
- Clover, light amber, \$1.45

SOUTH DAKOTA

- Clover, white, \$1.50 – 1.55

UTAH - Alfalfa, light amber, \$1.50

WISCONSIN - Clover, white, \$1.35 – 1.60

Prices paid to Canadian beekeepers for unprocessed bulk honey by packers & importers in U.S. currency, f.o.b. shipping point, containers included unless otherwise stated. Duty & crossing charges extra. Cents per pound.

SASKATCHEWAN - Floral Not Reported, white, \$1.42

Prices paid to importers for bulk honey, duty paid, containers included, cents per pound ex-dock or point of entry unless otherwise stated.

EAST COAST..... CHINA - Mixed Flowers, light amber, \$1.20
ROMANIA - Mixed Flowers, extra light amber, \$1.29
URUGUAY - Mixed Flowers, white, \$1.49 – 1.52
 - Mixed Flowers, extra light amber, \$1.43 – 1.49
VIETNAM - Mixed Flowers, light amber, \$1.35

WEST COAST.....BRAZIL - Wildflowers, white, \$1.48
CHINA - Mixed Flowers, white, \$1.15 - 1.25
CHINA - Mixed Flowers, extra light amber, \$1.02
THAILAND - Mixed Flowers, light amber, \$1.10
TURKEY - Mixed Flowers, extra light amber, \$1.25
VIETNAM - Mixed Flowers, light amber, \$1.10

COLONY, HONEY PLANT & MARKET CONDITIONS DURING MARCH

APPALACHIAN DISTRICT – (MD, PA, VA, WV) φ φ φ

March was true to its' reputation as it came in like a lion and went out like a lamb. February's blizzard snow took its time melting away as temperatures' remained below to about normal during early March along with scattered precipitation during that time. Temperatures' increased by mid-month and bees were able to go on cleansing flights as maples buds began to swell. By the end of March pussy willows, peaches, and early bulbs were in bloom. Precipitation was above average and subsoil and topsoil moisture levels returned to normal to above normal, which is delaying field preparation. Beekeepers are reporting heavy losses of bees and are attributing the losses to starvation and low fall brood production. Last year's drought decreased honey stores and decreased brood production. This, followed by the below normal cold temperatures during the winter (February only had four days over 32 degrees), resulted in an early estimate of 50-80% mostly 50-60% colony losses throughout the area. A few colonies that were fed supplementally in the fall and were able to produce brood faired okay and are strong this spring. Growers are concerned about fulfilling pollination contracts due to the decrease in available colonies and they are actively looking for colonies to purchase. Peaches in the southern part of the District are in full bloom and apples will be ready in about two weeks.

CALIFORNIA φ φ φ

Unsettled spring weather was pretty typical during March. The month began with rainshowers in the San Joaquin Valley which moved to the extreme northern border. On the 15th, heavy rains moved across Southern California. Downtown Los Angeles 4.10" of rainfall was their second highest daily total on record. Occasional rains continued through the next week but in some cases, was accompanied by warm, gusty winds which dried out the central valleys. The month ended with daily-record high temperatures in some areas. On the 29th and 30th, Oakland reported 76 and 79 degrees.

Bees were still busy pollinating almonds the first half of March when weather allowed. By the middle of the month, the bees were being moved out of the almonds and into stone fruit orchards and by the end of the month, into orange groves, apple orchards and vine seed crops such as cantaloupe. Others have been sitting in the

mountains where divides were made before they were moved down into the valleys to wait for the alfalfa to bloom. In some areas the blooms are spotty and coming on at different rates. Most beekeepers are optimistic about this years crop as the sage was beginning to produce a very good bloom in some areas. Good amounts of rain and snow in the mountains should help sustain the blooms.

Beekeeping supply companies were busy building frames and boxes as beekeepers have been selling their honey at much higher prices than a year ago and now have the money to replace some of their old equipment. Sales of packages and queens is also off to a good start this year. Not much wax is being offered as a lot of producers are so busy moving bees around, they don't have time to pull the wax.

Most packers did not purchase a lot of honey during March as domestic supplies decreased. Some new crop honey from Mexico, Brazil and Argentina are being imported.

IDAHO φ φ φ

April was warmer than usual. Bees were able to fly on many days. Many hives were still in California or just starting to come back from almond pollination. By months end, some hives were placed in Western Idaho fruit orchards and some went to Washington for tree fruit pollination. The summer irrigation water supply improved in most drainages but was still below average. Beekeepers were looking ahead to dandelion bloom in May.

FLORIDA φ φ φ

In the central to southern part of the state, the orange flow is over. This year, honey production was better in the southern part of the state with the central ridge area not being as productive. Normally it is the ridge section of the state that produces the most orange blossom honey, but because of this season's peculiar rain patterns, it is reversed. Reports are coming in from beekeepers in the ridge section saying that the honey crop is going to be short, predicting quantities of only 25-35% of last year's crop. The panhandle area of the state has not done a whole lot better thus far, as they are still in the middle of the Ti Ti bloom with approximately 2 weeks left to go. Fortunately the southern crop has been moderate enough to bring the statewide, total honey crop to half.

In the ridge and southern areas, bees will begin to be moved out of the orange grooves soon and moved to other areas where gallberry and palmetto are expected to bloom in 2 weeks. In the panhandle, tupelo should start coming on within 3 weeks and beekeepers will move their bees from the Ti Ti to the tupelo if need be, although in most cases it is unnecessary because the two crops are found so close together.

GEORGIA φ φ φ

Colonies around the state were in good condition. Hives were in various stages of building populations of workers. Losses from late winter tracheal mite infections and expiration of over-wintering food sources were somewhat higher than normal but hives have overcome losses due to replacements with young workers. Colonies around the state were actively gathering pollen and nectar from spring ti-ti, mustard and canola with clover, blackberry bushes, tupelo and privet hedge expected to soon be available food sources. Moisture levels continue to be above average with generally mild temperatures toward end of month.

ILLINOIS φ φ φ

The month of March was near normal over most of the state. This winter was a sharp contrast to warmer and milder winters experienced in previous years. Precipitation was heavy in southern sections while the western section of the state has been dryer than normal. The weather began to moderate by mid-month with some high temperatures in the mid-seventy range over most of the state. In the central and southern sections, honeybees had numerous cleansing flights and collected pollen from daffodils, crocus and hyacinth. The maple and magnolia trees were in bloom the last of the month providing good quality pollen. The Red Bud and fruit trees were expected to be in bloom in early April. Beekeepers had began to move hives into orchards. Some beekeepers received package bees and queens and were building up colonies for spring. Beekeepers in eastern and southeastern sections expected a strong swarming over spring as colonies overwintered well...

Retail honey sales continued to be good while bulk movement of honey was reported slow.

INDIANA φ φ φ

The main activities of beekeepers was moving hives from overwintering yards as fruit trees were in early stage of bud over central and southern sections of the state. Mite treatment strips were removed as beekeepers were allowed to work with their bees. Bees have been working dandelion, crocus, daffodils and Forsythia bloom. Honeybees also collected pollen from wild violet, lilac, maple. Within early April, honeybees were expected to be working red bud and pussywillow which was expected to provide colonies with heavy pollen flow. Weather conditions in southern sections were ideal for pollen collection as no high winds or cold temperatures were experienced throughout the month. Beekeepers reported pollen traps were filling rapidly and beekeepers had been busy checking those hives. Beekeepers had reported some early brood rearing and hives were in good condition after minimal overwintering losses.

Bulk and retail sales were fairly good during the month.

MISSOURI & IOWA φ φ φ

Weather during March had 9 to 15 degrees below normal temperature 2nd to 8th; normal 9th to 15th and above average balance of the month. Rainfall was generally below normal in Iowa, Western Kansas and Northern Missouri. Most of the Midwest is on the dry side ranging from abnormally dry to severe drought. Southeast Missouri has normal to wet conditions. Colonies are good condition in the region with colonies moderate to large as one goes further south where plants start blooming earlier. Pollen and nectar flow start a little late due to a cold February but picked up mid to late month. A cold front was moving through the Midwest Friday, March 28, 2003 to Sunday March 30 with rain and temps in the low 30s. The bees are in good shape in both states in spite of the cold weather during the winter. Finally, the season on the outlook seems to be a strong season for the bees with little loss of bees over this past winter.

MONTANA φ φ φ

The first of March, beneficial snow fell in some parts of the State. 14" fell in Billings and 5.8" was recorded in Glasgow. On the 9th, high temperatures were the lowest on record in locations such as Glasgow which only got to minus 1 degree. Another storm produced daily-record precipitation on the 16th in Kalispell when they recorded .48" of rain. Unfortunately, many areas of the state, especially along the eastern border, remain very dry.

Migratory beekeepers still have some of their bees in Washington State for fruit pollination. While the apples were not blooming during March, the bees had plenty of other pollen and nectar sources to provide them with more than enough feed. Others were returned to Montana for the summer.

NEW ENGLAND φ φ φ

Over this past winter, the extreme cold was the demise of 50 to 100 percent of beekeepers' hives. Southern New England had a better survival rate than northern sections. Some beekeepers reported mites were part of the problem. Many are restocking their hives although some beekeepers must wait until late April and into May to obtain new queens. This will create quite a setback for the spring blossoms pollination and honey collection. Bees were finding some maple blossoms in southern sections of New England.

The rise in the commercial honey prices has benefited the local beekeepers by narrowing the gap between large scale operations and the smaller hobbyists.

NORTH CAROLINA φ φ φ

North Carolina is entering the spring with wetter conditions than it has in several years. The drought that threatened water supplies last year has receded, however, there remains reason for concern below the surface. If the weather turns dry again this year, some water systems could experience shortages. The western part of the state received as much as 8 inches of snow the last weekend in March.

Due to a combination of cold weather, Varroa and Tracheal Mites there has been a severe loss of honeybees in the Piedmont and foothills. Beekeepers in these areas are now purchasing packages and nucleuses (nuc's) for their hives. The nuc's have sold quickly in North Carolina, causing beekeepers to turn to Georgia and South Carolina for their supplies. However, the western and eastern part of the state came through the winter in relatively good condition. The bees are now working Dandelions, Wild Cherry and Red Maple. Due to the

moisture in the ground, beekeepers and apiary specialist are optimistic about the Tulip Poplar and Sourwood for the major flow.

OHIO φ φ φ

Reports indicate a heavy loss of bees over the unusually cold winter. Estimates range from 30 to 50% with the higher losses in the north. Cleansing flights were at a minimum especially in northern Ohio. Cold was so severe in some areas that bees starved only inches away from food sources that they could not reach because they had to stay clustered to stay warm.

Hives have started to rebuild and the bees are feeding on ornamental shrubs, Bradford Pear trees, flowering maples and pussywillows. Pests are not noted at this time as a major concern.

OREGON φ φ φ

From the 3rd to the 8th, Mount Hood received 55 inches of snow, including 29 inches in 24 hours on March 6th & 7th. Most of the State was warm and mild the next couple of weeks with most of the rainfall along the coast. Astoria recorded 2.48" on the 21st. From the 12th to the 27th, Portland received measurable precipitation on 16 consecutive days. Despite the spotty, sometimes heavy rain, most areas of the State continued their dry conditions from February.

Beekeepers were busy moving their bees into the cherries, pears and apple orchards in the Dalles and Hood River areas. Occasional warm days are bringing some blooms on a little early this year.

UTAH φ φ φ

Moisture conditions and mountain snowpack was good in most areas of the state. Some migratory beekeepers were transporting bees back from California by the end of the month. Others were checking colony strength.

WASHINGTON φ φ φ

Warm, wet conditions were recorded across the State during March. On the 9th and 12th, Seattle had daily-record precipitation totals of .83" and .99". On the 15th, Spokane and Walla recorded over one-half inch of rain. From the 12th to the 14th, the Walla Walla area posted daily-record highs of 68, 74 and 67 degrees. The sometimes heavy rains continued through the end of March as some areas along the coast set a record on the 21st when they received over 2". Total precipitation which was just 76% of normal in Central Washington, increased to 92.5% by the end of the month. The water content in the mountain snowpack now averages 76% of normal so the Bureau of Reclamation announced irrigators will receive at least 91% of a full supply.

In Western Washington, numerous amounts of trees and plants were blooming during the month. But, the cool, wet weather kept the bees from leaving their hives. Beekeepers were getting their bees ready to move into the fruit orchards for pollination. Beekeepers that fed and medicated their bees earlier in the season came through the winter in very good condition.

In Central and Eastern Washington, despite the wet weather, bees were bringing in nectar and pollen as spring flowers were blooming along with locust, crab apple, flowering plum and other ornamental bushes and trees. Bees were taken out of the apricots and moved into cherry, pear and apple orchards. The unstable temperatures caused some of the pears to bloom before the cherries. On a couple of nights, temperatures dropped into the 20's and a few cherry blossoms were damaged.

Bees came back from the California almond pollination fairly heavy so little to no supplemental feeding was necessary.

WISCONSIN φ φ φ

Temperatures for the month of March averaged about normal. Precipitation for the month was fairly heavy over most of the state due to frequent snowfall. Beekeepers have begun spring treatments for mites. Beekeepers are facing increasing resistance of Varroa Mites to CheckMite® as approximately 45% of colonies checked, estimated at 700, were found infected. Beekeepers have also been checking colonies for the Small Hive Beetle and the number of infestations was down and is expected to dwindle over previous years. Beekeepers are

expecting American Foul Brood and Chalkbrood infestation to rise as more beekeepers are allowed to work with their colonies. Beekeepers estimated overwintering kill to range between 15-25% lower than previous years. Cleansing flights were restricted due to cold temperatures, frequent snowfall and high winds.

Retail honey sales were fairly good while bulk movement was reported slow with some beekeepers pointing out increased prices over last year.

U. S. EXPORTS OF HONEY BY COUNTRY OF DESTINATION, QUANTITY & VALUE

	JANUARY 2003		YEAR TO DATE 2003	
	QUANTITY	VALUE	QUANTITY	VALUE
	Kilograms	Dollars	Kilograms	Dollars
<hr/>				
HONEY, NATURAL, PACKAGED FOR RETAIL SALE ----- DOMESTIC MERCHANDISE				
Germany	1,824	5,507	1,824	5,507
Kuwait	25,104	70,424	25,104	70,424
Saudi Arabia	10,103	23,716	10,103	23,716
Philippines	7,666	20,360	7,666	20,360
China	826	2,860	826	2,860
Hong Kong	1,905	8,670	1,905	8,670
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TOTAL	47,428	131,537	47,428	131,537
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HONEY, NATURAL, NOT ELSEWHERE INDICATED OR SPECIFIED ----- DOMESTIC MERCHANDISE				
Canada	57,540	117,235	57,540	117,235
Bahamas	2,318	11,376	2,318	11,376
Korean Republic	10,987	23,140	10,987	23,140
Japan	---	---	37,951	70,433
Australia	---	---	13,426	30,000
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TOTAL	165,925	323,689	942,304	1,863,575
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HONEY, NATURAL, NOT ELSEWHERE INDICATED OR SPECIFIED ----- FOREIGN MERCHANDISE				
Costa Rica	18,600	31,620	18,600	31,620
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TOTAL	18,600	31,620	18,600	31,620
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U. S. IMPORTS OF HONEY BY COUNTRY, QUANTITY AND VALUE

COUNTRY	JANUARY 2003			YEAR TO DATE 2003		
	QUANTITY kilograms	CUSTOMS VALUE dollars	C.I.F. VALUE dollars	QUANTITY kilograms	CUSTOMS VALUE dollars	C.I.F. VALUE dollars
NATURAL HONEY, NOT PACKAGED FOR RETAIL SALE - - - WHITE						
Canada	418,967	1,451,292	1,460,925	418,967	1,451,292	1,460,925
Chile	117,143	298,923	309,409	117,143	298,923	309,409
Brazil	308,015	737,457	786,011	308,015	737,457	786,011
Argentina	368,713	845,839	881,846	368,713	845,839	881,846
United Kingdom	2,717	7,742	8,027	2,717	7,742	8,027
Czech Republic	31,070	82,336	86,636	31,070	82,336	86,636
Russia	348	2,018	2,305	348	2,018	2,305
Ukraine	16,128	28,868	31,851	16,128	28,868	31,851
Romania	18,760	46,699	49,437	18,760	46,699	49,437
Turkey	36,000	74,000	77,400	36,000	74,000	77,400
TOTAL	1,317,861	3,575,174	3,693,847	1,317,861	3,575,174	3,693,847
NATURAL HONEY, NOT PACKAGED FOR RETAIL SALE - - - EXTRA LIGHT AMBER						
Canada	11,753	34,980	35,180	11,753	34,980	35,180
Mexico	38,922	102,954	105,050	38,922	102,954	105,050
Chile	72,155	182,944	191,071	72,155	182,944	191,071
Brazil	59,630	90,379	94,292	59,630	90,379	94,292
Argentina	43,128	104,688	109,097	43,128	104,688	109,097
Australia	18,000	54,660	57,160	18,000	54,660	57,160
TOTAL	283,588	636,605	661,810	283,588	636,605	661,810
NATURAL HONEY, NOT PACKAGED FOR RETAIL SALE - - - LIGHT AMBER						
Canada	12,156	38,361	38,557	12,156	38,361	38,557
Mexico	104,810	260,691	266,516	104,810	260,691	266,516
Peru	144,362	263,076	277,439	144,362	263,076	277,439
Chile	38,827	95,568	98,923	38,827	95,568	98,923
Brazil	413,637	970,630	1,001,181	413,637	970,630	1,001,181
Uruguay	40,440	85,531	88,620	40,440	85,531	88,620
Argentina	42,582	108,665	112,885	42,582	108,665	112,885
Germany	30,497	75,307	82,383	30,497	75,307	92,383
Ukraine	74,304	161,943	172,078	74,304	161,943	172,078
Moldova	35,791	73,182	77,482	35,791	73,182	77,482
Romania	112,820	280,845	292,934	112,820	280,845	292,934
Bulgaria	74,740	197,964	213,692	74,740	197,964	213,692
Turkey	414,390	925,056	995,052	414,390	925,056	995,052
India	109,860	197,281	219,621	109,860	197,281	219,621
Vietnam	238,750	443,443	472,981	238,750	443,443	472,981
Malaysia	36,000	47,448	52,200	36,000	47,448	52,200
China	274,996	361,802	381,019	274,996	361,802	381,019
Burkina	19,905	38,190	41,356	19,905	38,190	41,356
TOTAL	2,238,057	4,624,983	4,884,919	2,238,057	3,624,983	4,884,919

NATURAL HONEY, NOT PACKAGED FOR RETAIL SALE – NOT ELSEWHERE SPECIFIED OR INDICATED

Canada	19,822	46,297	47,297	19,822	46,297	47,297
Mexico	41,845	87,141	87,741	41,845	87,141	87,741
Dom. Republic	11,340	20,000	20,875	11,340	20,000	20,875
Brazil	174,443	426,521	439,807	174,443	426,521	439,807
Uruguay	19,630	46,462	47,054	19,630	46,462	47,054
Argentina	10,198	31,881	33,387	10,198	31,881	33,387
Austria	1,453	8,902	9,801	1,453	8,902	9,801
Switzerland	1,760	12,388	12,738	1,760	12,388	12,738
Ukraine	5,046	8,075	9,140	5,046	8,075	9,140
Taiwan	1,080	2,505	2,602	1,080	2,505	2,602
TOTAL	286,617	690,172	710,442	286,617	690,172	710,442

Pacific Northwest Honey Bee Pollination Survey – 2001/2002

By Michael Burgett, Professor Emeritus

Department of Entomology - Oregon State University, Corvallis, OR 97331

Since 1986 the Honey Bee Laboratory at Oregon State University has conducted an annual survey of pollination economics in the Pacific Northwest (PNW). An annual report was not published for the pollination year 2001, so this year's report will include data from both 2001 and 2002.

With each year's information, the strength and importance of our region's beekeeping industry is highlighted. All participants in a regional agricultural industry need to understand the critical role played by beekeeping in overall agricultural production. This is especially true today with the increased costs and problems caused by the presence of honey bee mite parasites and the expanding geographical range of our European honey bee's tropical "cousin" the Africanized honey bee, now well established southern California, as well as Texas, New Mexico, Arizona and Nevada.

The use of managed honey bee colonies for commercial crop pollination remains the most important function of the PNW beekeeping industry. The vast and diverse agriculture of the PNW relies on a healthy and strong beekeeping industry to maintain optimum production. An enhanced knowledge of pollination economics is critical to every beekeeper that enters into the world of commercial crop pollination. It is also important for those growers who contract honey bee colonies for managed pollination to understand current economic conditions of the beekeeping industry.

This year's survey provides data that continue to show a number of trends, one of which is the dependence of PNW commercial beekeepers on the income generated from colony rentals. For 2001/02 the average commercial beekeeper reported receiving 70% of his or her annual operating gross from pollination rental. I am aware of no region in the U.S., or the world for that matter, where the rental of honey bee colonies for pollination is of such importance to the economic survival of a regional beekeeping community and of such benefit to the agricultural base that requires insect pollination for optimizing product yield. Even in California, the state with the largest and most varied beekeeping industry in the U.S., pollination rental income is just slightly over 50% of operational revenues (California State Beekeepers' Association 2000 pollination rental survey).

Ever since the arrival of the tracheal mites and varroa brood mite the average size of an individual commercial operation has increased. This is a reflection of higher colony mortality and the need to maintain adequate colony numbers for pollination contracts. The mite "plague" effectively eliminated marginal beekeeping operations & those that remained needed to become larger in order to fulfill the need for rental colonies by the at-large agricultural base in the PNW and in California.

As in past years, the 2001/02 surveys were sent to all Washington and Oregon beekeepers that registered more than 25 colonies with their respective state agriculture departments. A total of 14 commercial beekeepers returned completed surveys. These individual beekeepers collectively owned 59,576 colonies. A total of 104,322 colony rentals were reported for all respondents, which produced \$3,799,814 in rental income for the participating beekeepers.

For 2002 the average pollination rental fee, computed from commercial beekeeper rentals on all crops reported, was \$36⁴⁰. This is a \$2⁷⁵ (8%) increase from the average pollination fee charged in 2001 (\$33⁶⁵) (see Table 1 & Figure 1). The 2002 average rental fee is nearly an 11% increase from the 2000 average of \$32⁸⁵ (the last published figure.)

Commercial beekeepers were responsible for 99% of all reported pollination rentals and a corresponding 99% of all pollination income. This is very similar to past years and shows how dominant commercial beekeepers are in the arena of large-scale agricultural pollination and what a minor role is played by semi-commercial beekeepers in contributing to the regional pollination requirement.

The average pollination rental fee for semi-commercial beekeepers for the 2002 season was \$30³⁵, which was significantly lower than that charged by commercial beekeepers (\$36⁴⁰). For semi-commercial beekeepers the average annual per colony pollination income was \$37⁴⁰. A semi-commercial colony, on average, was rented for 1.23 sets in 2002 which accounts for the difference in the per colony income generation compared to a commercial hive.

For a commercial beekeeper the gross amount of income generated from pollination rental leveled off in 1997 and 1998, but increased in 1999 (\$183,780). For 2002 this figure was calculated to be \$271,213. This dramatic increase results largely from the increasing size of the average commercial operation.

During the past eight years the average rental fee has increased from \$28¹⁰ (1994) to \$36⁴⁰ (2002). It needs to be stressed that honey bee colony rental has, for many decades, been an underpaid service to the agricultural industry. It is really only within the past decade that rental fees have begun to more accurately reflect the enormous value-added service of managed pollination. This is shown by the 98% increase in the average pollination fee during the last twelve years; 1990 = \$18⁴⁰ to 2002 = \$36⁴⁰.

Within the PNW, tree fruits are the dominant crops for pollination income (see Table 3). In 2002 the combination of pears, sweet cherries and apples accounted for 55% of all reported rentals and 48% of all reported pollination income. Paradoxically, the single most important crop for PNW beekeepers is grown in California, *i.e.*, almonds. Almonds were responsible for 36% of all rentals and 44% of all rental income in the 2002 survey. Almonds possessing the highest average pollination fee reported for 2002 (\$45⁰⁰). More than 95% of all commercial colonies in Oregon and Washington are taken to California for almond pollination. In 2002 the combination of almonds and tree fruit accounted for 90% of all rentals and 92% of pollination income, which illustrates the dominance and importance of these crops for a commercial PNW beekeeper.

In 2002, for crops pollinated in the PNW, cranberries pollination provided the highest average fee at \$39⁰⁰ per colony rental. In terms of acreage, apples are the largest crop grown in the region and this is reflected by the large number of reported rentals (44% of all rentals and 40% of the total reported rental income.)

The crops with the lowest pollination fees are the legumes crimson clover and hairy vetch, both of which are grown as seed crops but are also traditional honey producers, hence historically low fees. Their significance to regional pollination income is very minor, in terms of rental income, the number of colonies involved, and the very regional nature of both crops (mid- to northern Willamette Valley).

Berry crops (blackberries, raspberries and blueberries), which as late spring to early summer bloomers and copious nectar producers (blackberries and raspberries), often produce honey crops as well as pollination fees. The 2002 average pollination fee for all combined berry crops was \$23⁷⁵.

The crop with the most remarkable change from the late 1990^{ies} is meadowfoam. For 2002 only one beekeeper reported colony rentals on meadowfoam, which compares to 21 beekeepers with 3,830 rentals reported in 1999. The reason is simple, very little meadowfoam is now being grown due to major financial disruptions in the meadowfoam industry within the Willamette Valley.

The average PNW commercial honey bee colony was rented 1.75 times in 2002 and this includes California almonds. This is a decrease from the 1.92 figure generated from the 2001 survey. This statistic has been dropping for the past four years; in 1999 the average number of rentals per colony was 2.77 times during the pollination season. Does this actually reflect the real world situation? Are commercial beekeepers concentrating on almonds and PNW tree fruit (which historically provide the major sources of pollination income) and reducing the number of colonies involved in minor crop pollination?

For the 2002 pollination season an average rental fee of \$36⁴⁰, combined with an average of 1.75 pollination sets per colony, results in an annual per colony pollination income of \$63⁷⁰, which is an 29% decrease from the 1999 colony income statistic of \$89⁷⁰. This trend of reduced per colony rentals, along with the accompanying reduced per colony income result in a lessening, or at least a stagnation in pollination "effort" on the part of regional beekeepers. Agriculture at-large is presently experiencing serious financial problems, and one needs only look to the apple and cranberry industries to see this. Beekeepers have been reluctant to implement increased pollination fees to an already stressed agriculture industry within the PNW.

The combined colony numbers from those commercial beekeepers who responded to the 2002 survey, (59,576 hives), represent at least one-fourth to perhaps as many as one-third of the commercial hives in Oregon and Washington. Therefore, if we multiply the reported pollination income (\$3,799,814) by a factor of 4 and 3, we have a ball park estimate of the pollination income generated by commercial beekeeping in the PNW, *i.e.*, a pollination income perhaps as low as \$11,000,000 to a reasonable high of \$15,000,000. This is far more than the normal "estimates" assigned to the bee industry by agricultural economists, who, for reasons unexplained, usually do not include pollination rental income in their estimates of industry economic status. Pollination income in the PNW far exceeds the value of honey and wax sales for our regional beekeeping industry. Pollination rental income is frequently four to five times greater than honey and wax sales in any given year.

An added question to the survey in 2001 and again in 2002 was how frequent is the use of written pollination contracts between beekeepers and their respective growers. In both years the responses were very similar. It appears that using written contracts is the unusual case. 70% of the commercial beekeepers said they do not use them; 15% said they always use them; and 15% said they use written contracts only for new accounts involving growers they have never worked with in the past. A frequent beekeeper comment went along the lines of 'a handshake has always been enough for me and my growers.'

While colony income from pollination rental is a critical statistic, so therefore is the annual cost to maintain a healthy hive of honey bees. Responses to this question on the survey have varied widely, often from a misunderstanding of what was being asked. However, numerous commercial beekeepers, who have over the years maintained excellent cost accounting records, have responded with numbers that are very reasonable relative to today's economy. The average annual hive maintenance cost was \$96³⁵ per colony for the year 2002 (highest maintenance cost = \$180; lowest = \$52⁵⁰), which is obviously, a reduction from the \$104 reported for 1999.

It is very important to recognize that the average colony maintenance cost is higher than the average per colony pollination income and this is especially so from the 2002 survey information (colony pollination income = \$63⁷⁵; colony maintenance cost = \$96³⁵; a difference of \$32⁶⁰ per colony.) This illustrates that operation profits are generated by other sources of income outside of pollination rental, most importantly, honey production. As all beekeepers realize, the year 2002 resulted in the most dramatic increase in the wholesale

price of honey in the history of American beekeeping. Depending on when you sold or contracted your honey in 2002, the wholesale price was from a low of \$0⁹⁰ to as much as \$1⁶⁰ per pound. Basing wholesale honey prices at a conservative \$1²⁵ cents per pound, the average commercial hive had to produce about 26 pounds of honey in order to break even.

Remember that much of the data presented here represent the pollination rental situation of the "average" commercial beekeeper. For individual beekeepers the survey results are most useful as benchmarks against which they should compare their individual operations. Please let me stress again that all of these "projections" are only as accurate as the data provided by responding beekeepers. The projections also assume that the participating beekeepers collectively represent the mainstream of commercial beekeeping in the Pacific Northwest.

Reflections:

There are some recent observations that perhaps do not necessarily represent the "normal" conditions for commercial pollination rental by PNW beekeepers. One is the dramatic increase in the average size of a commercial beekeeping operation (4,255 colonies in 2002; 3,168 in 2001; and 2,055 in 2000.) In the past few years a number of very large sized operations have begun contributing to the survey, while the number of medium sized operations who report has dropped. This has unduly, perhaps artificially produced an "average" for a PNW commercial operation that does not really reflect the actual situation. Additionally, the average number of rentals per individual colony has decreased (1.75 in 2002; 1.92 in 2001; compared to 2.77 in 1999.) A small amount of this decrease could be explained by a shift of colonies away from pollination to honey production due to the incredibly dramatic increase in the wholesale price of honey in 2002, but that is far from the whole picture, especially considering that the sharp rise in honey prices began at least mid-way through the 2002 pollination season. For the production year of 2003 I would expect to see the higher honey price remove colonies from the pollination rental scenario.

A bright spot for PNW beekeepers is the steady and significant increase in the average price paid for almond pollination (\$45⁰⁰ in 2002; \$40⁷⁰ in 2001 and \$39⁰⁰ in 2000.) These almond averages represent the highest fees for any single crop pollinated by PNW beekeepers and reflect the concern and willingness of California almond growers to pay a premium rental fee in order to ensure adequate colony numbers.

I wish to again thank all those beekeepers in Oregon and Washington who took the time to participate in the survey, which over the past eighteen years, has generated the most accurate assessment of commercial pollination known in the U.S.

Table 1. AVERAGE POLLINATION FEE 1992 - 2002

<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
19.25	22.50	28.10	29.60	31.55	31.05	29.65	32.25	32.85	33.65	36.40

Table 2. AVERAGE COLONY NUMBERS, AVERAGE RENTAL FEE PER HIVE & AVERAGE ANNUAL RENTAL INCOME PER HIVE FOR A COMMERCIAL BEEKEEPING OPERATION IN THE PACIFIC NORTHWEST 1992-2002.

Year	Average Number Colonies	Average Rental Fee	Annual Rental Income per Colony
1992	765	\$19.25	\$49.70
1993	990	\$22.50	\$62.25
1994	1,225	\$28.10	\$78.70
1995	1,348	\$29.60	\$78.15
1996	1,350	\$31.55	\$97.50
1997	1,504	\$31.05	\$92.20
1998	1,153	\$29.65	\$83.00
1999	2,058	\$32.25	\$89.30
2000	2,055	\$32.85	\$77.40
2001	3,168	\$33.65	\$64.60
2002	4,255	\$36.40	\$63.75

Table 3. 2002 AVERAGE COMMERCIAL POLLINATION FEES BY CROP

Crop	No. Rentals	Avg. Fee	Income (\$)
Pears	4,694	\$30.85	144,822
Cherries	5,566	\$30.05	176,156
Apples	46,657	\$32.30	1,506,986
Berries 1/	2,460	\$23.75	58,435
Blueberries	1,103	\$21.45	23,672
Cranberries	1,416	\$39.00	55,224
Vegetable seed	1,748	\$36.60	64,008
Clover seed 2/	420	\$32.00	13,440
Crimson clover seed	75	\$15.00	1,125
Radish seed	344	\$14.60	5,016
Cucumbers	400	\$23.00	9,200
Sq. & Pump. seed	532	\$32.60	17,354
Watermelon	1,132	\$34.80	39,420
Meadowfoam	42	\$35.00	1,470
Misc. 3/	337	\$27.05	9,112
Almonds	37,396	\$45.00	1,683,374

SUM = 104,322 \$3,799,814

Average Pollination Fee = **\$36.40**

1/ Includes blackberries, raspberries, Marion berries, & Logan berries.

2/ Includes red & white clover as grown for seed.

3/ Includes apricots, kiwi, vetch & holly.

SUMMARY INFORMATION - 2002

A total of **14** commercial beekeepers, owning **59,576** colonies returned survey forms.

A total of **104,322** colony rentals generated **\$3,799,814** in rental income.

The average per colony pollination rental fee (for all beekeepers, for all crops including California almonds) was: **\$36.40**

The average commercial colony was placed in **1.75** pollination sets in 2002, for an average per hive rental income of **\$63.75**.

The average commercial bee operation maintained **4,255** colonies and grossed **\$271,256** in pollination rental income for 2002.